

REMARKS

Claims 1-4, 7-12 and 15-58 are pending. Claims 1, 7-10, 20, 24-26, 31-32, 36-39, 49, 52-54, and 58 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Additionally, Claims 1-4, 7-12 and 15-23, and 36 stand rejected under 35 U.S.C. § 103 over the combination of Jung (US 4,311,581) over Takahashi (US 4,894,188). Reconsideration of all rejections is respectfully requested in light of the remarks which follow.

REJECTION UNDER 35 U.S.C. § 112

Claims 1, 24, 36-37, and 58 are rejected under 35 U.S.C. § 112 for the recitation of the term "comprising," within the phrase "an acid product comprising." Applicants respectfully submit the term "comprising" is "a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim." (M.P.E.P. § 2111.03) Moreover, "comprising" is a term regularly used in patent prosecution as the term "leaves the claim open for the inclusion of unspecified ingredients even in major amount." (M.P.E.P. § 2111.03) Applicants therefore submit that the term "comprising" is an open-ended transitional term having a well-known definition in the art. The term "comprising" therefore is not an indefinite term under M.P.E.P. § 2111.03. Applicants respectfully request withdrawal of this rejection.

Claims 20, 31-32, and 53-54 are rejected under 35 U.S.C. § 112 for the recitation of the term "comprising," within the phrase "the (concentrated) acid product comprising." Applicants respectfully submit the term "comprising" is "a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim." (M.P.E.P. § 2111.03) Moreover, "comprising" is a term regularly used in patent prosecution as the term "leaves the claim open for the inclusion of unspecified ingredients even in major amount." (M.P.E.P. § 2111.03) Applicants therefore submit that the term "comprising" is an open-ended transitional term having a well-known definition in the art. The term "comprising" therefore is not an indefinite term under M.P.E.P. § 2111.03. Applicants respectfully request withdrawal of this rejection.

Claims 7-10 are rejected under 35 U.S.C. § 112 for the recitation of the term "the olefin comprises," within the phrase "contacting the olefin comprises contacting." Applicants respectfully submit the term "comprises" is "a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim." (M.P.E.P. § 2111.03) However, in the interest of furthering prosecution, Applicants have substituted the term "the olefin comprises" with the term "the olefin is contacted." This simple substitution is done without prejudice, and to conform to the grammatical style preferred by the Examiner. Moreover, this alteration of the claims does not alter the scope of the claims in anyway. Applicants respectfully request withdrawal of this rejection.

Claims 25-26 are rejected under 35 U.S.C. § 112 for the recitation of the term "methyl-t-butylether comprises," within the phrase "contacting methyl-t-butylether comprises contacting." Applicants respectfully submit the term "comprises" is "a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim." (M.P.E.P. § 2111.03) However, in the interest of furthering prosecution, Applicants have substituted the term "contacting methyl-t-butylether comprises contacting" with the term "the methyl-t-butylether is contacted." This simple substitution is done without prejudice, and to conform to the grammatical style preferred by the Examiner. Moreover, this alteration of the claims does not alter the scope of the claims in anyway. Applicants respectfully request withdrawal of this rejection.

Claims 41-44 are rejected under 35 U.S.C. § 112 for the recitation of the term "the olefin or ether comprises," within the phrase "contacting the olefin or ether comprises contacting." Applicants respectfully submit the term "comprises" is "a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim." (M.P.E.P. § 2111.03) However, in the interest of furthering prosecution, Applicants have substituted the term "contacting the olefin or ether comprises contacting" with the term "the ether is contacted." This simple substitution is done without prejudice, and to conform to the grammatical style preferred by the Examiner.

Moreover, this alteration of the claims does not alter the scope of the claims in anyway. Applicants respectfully request withdrawal of this rejection.

Claims 7-10, 25-26, and 41-44 have been additionally rejected under 35 U.S.C. § 112 for reciting "contacting the olefin comprises contact," "contacting methyl-t-butylether comprises contacting," "contacting the olefin or ether comprises contacting," and "contacting the ether comprises contacting." Applicants respectfully submit that the above amendments to the claims, explained in light of the preceding paragraph overcomes the rejection. Applicants respectfully request withdrawal of this rejection.

Claims 38, 49, and 52 have been rejected under 35 U.S.C. § 112 for reciting the word "olefin" without sufficient antecedent basis. Applicants have deleted the term "olefin" from each of the claims, without prejudice. Therefore, applicants respectfully request withdrawal of this rejection.

Claim 39 has been rejected for reciting the term "the general formula" as being vague and indefinite under 35 U.S.C. § 112. While Applicants believe this term to be definite as written, the term has been removed from Claim 39 in the interest of furthering prosecution and in deference to the Examiner's preferred stylistic choice, without prejudice. Applicants respectfully request withdrawal of this rejection.

REJECTION UNDER 35 U.S.C. § 103(a)

Claims 1-4, 7-12, 15-23, and 36 have rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,311,851 (hereinafter Jung) in view of U.S. Patent No. 4,894,188 (hereinafter Takahashi).

Applicants take this opportunity to respectfully remind the Examiner that in his Office Action mailed on August 26, 2003 he withdrew "the rejection of Claims 1-23 under 35 U.S.C. § 103(a) as being unpatentable Jung in view of Takahashi... due to applicants' convincing argument." In the same Office Action mailed on August 26, 2003 the Examiner additionally

withdrew "the rejection of Claims 24-35 under 35 U.S.C. § 103(a) as being unpatentable Jung in view of Takahashi... due to applicants' convincing argument." Applicants respectfully submit that the reasons for patentability of Claims 1-36 provided in the previous response are sufficient to establish patentability over Jung and Takahashi, individually or in combination.

Applicants previously submitted that Jung and Takahashi, individually or in combination, fail to teach or suggest all of the claim elements of Claims 1-36 for the detailed reasons given below.

Applicants claimed subject matter is directed to methods of making esters by the carbonylation of olefins. The combination of the catalyst of Takahashi with the process of Jung will lead to methods of preparing carboxylic acids, not Applicants' claimed esters. Takahashi clearly requires the presence of water with HF (See Takahashi, Claim 1, the Abstract and column 1, lines 27-42.). If the Takahashi catalyst is used in with Jung to convert an olefin to an ester, then the presence of water (required by the Takahashi catalyst) will lead to the formation of an acid, not an ester. Jung expressly teaches the presence of water with an olefin, carbon monoxide and BF_3 forms an acid, not an ester (Jung at column 1, lines 32-34) and that the presence of water destroys BF_3 (Jung at column 1, lines 47-51 and column 3, lines 8-11). The combination of the catalyst of Jung and Takahashi is inoperative to form esters from olefins. One of ordinary skill in the art would not be motivated to combine Jung and Takahashi to form esters since the resulting product from the combination of Jung and Takahashi would be an acid.

It has long been established that catalysts are generally considered unpredictable merely from the chemical nature of the catalyst. *Corona Co. v. Dovan* (USSC 1928) 276 US 358, 369. Catalytic effects are not ordinarily predictable with certainty. *In re Doumani et al.* (CCPA 1960) 281 F.2d 215, 126 USPQ 408. Further, the effect of the modification of one prior art catalytic process in a manner employed in another prior art process which employs a different catalyst was held unpredictable. *Ex parte Berger et al.*, (POBA 1952) 108 USPQ 236. To find obviousness, "there must be some reason for the combination other than the hind sight gleaned from the invention itself." *Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985).

Stated in another way, "[I]t is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch*, 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992). Since Jung discloses that the presence of water leads to acids and the Takahashi catalyst system involves HF and water, then one could not predict that the combination of Jung and Takahashi would give an ester instead of an acid. There is no motivation to combine Jung and Takahashi in light of the Jung avoiding water and Takahashi requiring water.

Moreover, Claim 36 is patentable over the cited Jung and Takahashi, individually or in combination, for the following reasons. Applicants recite a method of making an ester, comprising contacting an olefin with carbon monoxide and an acid composition comprising $\text{BF}_3 \cdot \text{ROH}$, wherein R represents an organic radical comprising carbon and optionally hydrogen, and wherein the molar ratio $\text{ROH}:\text{BF}_3$ is from about 2:1 to about 4:1.

Jung is directed to a process wherein an olefin is carbonylated with carbon monoxide to form carboxylic acid esters in the presence of a catalyst complex of one mole of BF_3 and one mole of alcohol (see Abstract). Jung does not disclose an acid composition comprising $\text{BF}_3 \cdot \text{ROH}$ wherein the molar ratio $\text{ROH}:\text{BF}_3$ is from about 2:1 to about 4:1. As Examiner concedes, the catalyst is prepared using ratios of from 0.75 to 2 moles of boron trifluoride per alcohol (see Page 5, Paper 10). Jung does not disclose all the elements recited by Applicants.

Takahashi is directed to producing fatty acids or their derivatives by reacting an olefin with carbon monoxide and water or reacting an alcohol or an ether and carbon monoxide in the presence of hydrogen fluoride catalyst (See Abstract). Takahashi does not disclose an acid composition comprising $\text{BF}_3 \cdot \text{ROH}$ wherein the molar ratio $\text{ROH}:\text{BF}_3$ is from about 2:1 to about 4:1. Accordingly, Takahashi fails to remedy the deficiencies in Jung.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally

available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Neither Jung nor Takahashi disclose an acid composition comprising $\text{BF}_3 \cdot \text{ROH}$ wherein the molar ratio $\text{ROH}:\text{BF}_3$ is from about 2:1 to about 4:1. Accordingly all elements of Applicants' presently claimed invention are not disclosed in the references cited. Since all the claim limitations are not disclosed in the cited references, a *prima facie* case of obviousness cannot be made. Therefore, Jung and Takahashi, either alone or in combination, do not render independent Claims 1 and 36, or the claims that depend therefrom, obvious.

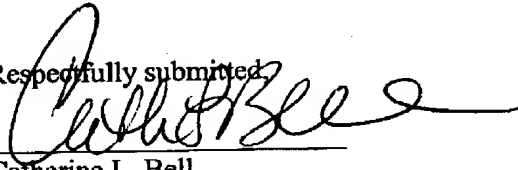
While Examiner concedes the molar ratio of $\text{ROH}:\text{BF}_3$ is from 1.3:1 to 1:2, Examiner alleges that even though the claim ranges of the prior art do not overlap, they are "so close that one skilled in the art would have expected to have the similar reaction condition in the absence of an unexpected result" (Page 7, Paper 10). Applicants respectfully disagree.

As mentioned above, it has long been established that catalysts are generally considered unpredictable merely from the chemical nature of the catalyst, (*Corona Co. v. Dovan* (USSC 1928) 276 US 358, 369) and that catalytic effects are not ordinarily predictable with certainty. *In re Doumani et al.* (CCPA 1960) 281 F.2d 215, 126 USPQ 408. Further, Jung specifically states "in contrast to the 1:1 molar ratio catalyst, it [$\text{BF}_3 \cdot 2\text{CH}_3\text{OH}$] is non-selective to the desired product and of relatively low activity. Accordingly, a substantial amount of such complex is undesirable." (Column 4, Lines 37-48). Jung therefore confirms that one skilled in the art would NOT have expected similar reaction conditions. In fact, Jung actually teaches away from Applicants' presently claimed invention.

Applicants acknowledge that the claims have been amended since the Examiner has

withdrawn his rejection; however, all of the amendments made since where in accordance with the Examiner's requests. Applicants, therefore, respectfully request the rejection to claims 1-4, 7-12, 15-23, and 36 be withdrawn.

May 25, 2004
Date

Respectfully submitted,

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